# Phase 1: Management

## Decisions Made:

The team read the assessment brief to gather an idea on what the objective is. They were asked to make a software for a game café to add members, books games for customers and events for members. The team was informed that there are many ways to carry out the management process by using different patterns and management tools. So, the team decided to do some research on each of these concepts, gather an understanding, and choose the most suitable method for the type of project they were asked to make.

### Agile Development – SCRUM

The team had looked in the internet about SCRUM development and found a lot of benefits in using this methodology (Radigan n.d.). The methodology encourages the team to conduct SCRUM Meetings, which last for about 15 minutes, to discuss about the current state and progress of the development. It also allows the team to assign tasks in fixed-length iterations called sprint where at the end of it, called milestones, the team must have all the tasks completed and ready for shipment. They were also shown a video which explained everything about SCRUM in about 10 minutes (Axosoft 2012). This methodology seemed very suitable for this type of project, but the team wanted to research other methods as well.

### Agile Development – Kanban

The process of Kanban is almost identical to SCRUM but has its variations (Radigan n.d.). It encourages a system of continuous delivery which allows the team to release their work to the customers frequently. Like a Trello board, Kanban follows a method where each task is represented as a card in a board. These cards are then placed in various columns indicating the different phases of completion: to-do, in progress code review and completed. Each column can be assigned to have a maximum number of tasks. For example, there can only a maximum of 4 tasks in the ‘In Progress’ column. By this way, if one column starts to get over-populated, the team will know that they’re behind schedule and need to pick up the pace. The team also looked up a video to gain more knowledge about the principles of Kanban (Axosoft 2013). The methodology is used by Toyota to manufacture their automobiles which consists of around 30,000 parts (Toyota n.d.). This method seemed doable for the team but wasn’t satisfied with the overall content.

### Test Driven Development (TDD)

This method follows a test-first development where people write a test before they write enough code and check if it works (Ambler 2002). The main objective is to make sure, the team has their design or requirements right before they start implementing the code. So, the method involves the team to carry out a series of tests and keep working their way through it until it’s successful. The team had decided that this method would consume a lot of time so, they rejected this.

### GRASP

The team gathered around for the first SCRUM Meeting to discuss how the processes will be carried out. The team then decided to write down the user stories of this project (Add Reference) based on the requirements mentioned in the assessment brief on February 13. The team decided to do this because it was a good way to start the project with the knowledge of what needs to be completed by the end of the development cycle.

In the same SCRUM meeting, the team decided to carry out the next step. Using the user stories, the team then prioritized the tasks with a scale of 1-5 and created the product backlog (Add Reference). The process was done in all estimation, but the team made sure that it was also reasonable. This was created because possessing a knowledge of only the tasks will only apply pressure and stress to the team members. Prioritising them and labelling them with story points (weight of task) will provide a better understanding of each task. It will also help the team to plan better by balancing the workload among team members and place the tasks in a more reasonable timeline.

The next step was to create sprints for the development cycle and place the tasks accordingly, from the product backlog, and assign them to team members (Add Reference). The tasks were assigned randomly to each team member and the estimated dates of completion of the tasks were entered by the respective team members. The sprint planning had to be done because this was the primary aspect of management and planning. The team members were expected to measure their progress with the help of this table and stay on schedule.

The final task of the day was creating a Burndown Chart (Add Reference). So, the team proceeded to carry out the necessary process. This was created because having the sprint plan created, the team needed to have a visual representation of their progress, so they can have a clear understanding of how many tasks are left and how much time is left for them to complete them before the final deadline.

With all these creations, the management phase had been concluded and it was time to start completing the tasks one after the other.

## Personal Evaluation:

When I read the assessment brief for the first time, I thought it was a task of moderate difficulty. We all had the heavy workload of our dissertation upon our shoulders and wondered if it’s even possible to spare time to accomplish these tasks. We still tried to spare as much as time as possible, so that we wouldn’t struggle in the last moment. I, personally, thought that the management phase had begun very well. We all had the necessary items we needed to carry out the planned tasks and having these items made me confident in accomplishing them.

# Phase 2: Design

## Decisions Made:

The design phase had begun with each team member having tasks to complete.

The first design material that the team decided to create was the Use Case Diagram and was completed on March 15 (Add Reference). The team decided to create this because they thought it would serve a great purpose in understanding the flow of processes that will be carried out in the software and the interaction between the user and the software. They also thought it will help them greatly during the implementation phase.

The team was happy with the use case diagram, but they needed more info on each step that was carried out, so they can understand the concepts in more depth. This was when the team had decided to create the expanded use case as well (Add Reference). The textual description in these documents was a lot to read but provided a much deeper knowledge and helped the team greatly. This task was completed on March 30.

To support these diagrams, the team wanted to create the Robustness diagram (Add Reference) and the Structure chart (Add Reference) as well. These were created because the team wanted to gain extra knowledge about the functions that each step was going to do in the software, so that they can produce a more efficient product. These tasks were completed around the mid of February.

The next design artefact that the team had decided to create were the CRC cards (Add Reference). It was decided because they had thought it would be better to have a simple idea about the classes that are going to be implemented in the product and its relationship with other classes. This task was completed at the end of February. With the help of this, the team will then be able to create the class diagram (Add Reference) in a more expressive way that will help the team to understand it more clearly.

The next task in the design phase was the interface design (Add Reference). This was very essential as the team had to gain an idea of how the software is going to look in the final product so that they can implement it easily during the implementation phase. This task was completed on February 13.

## Personal Evaluation:

This phase progressed very well as all team members contributed and did their very best on their tasks and made sure they were on time. I found the tasks to be of moderate difficulty as the software itself was not very complex. I was more confident than I was in the management phase and realised that the implementation phase should be easy for the whole team.

I was responsible for creating the use case diagram, expanded use cases, CRC cards, and the robustness diagram. Creating CRC cards was the easiest of them all and the team had said that it was helpful for them to create the class diagram.

One of the few challenges I had encountered during these tasks is trying to keep the diagrams as concise as possible. Almost every function in the software are quick and short and must be completed within minutes. So, I had to make sure that I don’t extend unnecessarily and create extra work for the team to implement during the implementation phase. However, my team helped me secure a proper diagram which was clear, simple, and easy to grasp. Other minor challenges were colour coding the diagrams so, each section stands out from each other and will be easier for any person to read.

# Phase 3: Implementation

## Decisions Made:

This was the main phase of the whole development process. Using the artefacts created from the design phase, the team had to implement the code using a Windows form in Visual Studio. The team thought to get some coding samples ready before implementing them into the project.

This was when the team had decided to write the SQL scripts for the various functions of the product (Add Reference). There were 3 main functions: adding members, booking games, and booking events. So, each team member took responsibility of each section and started writing the scripts. This was very useful because the database was the most important and difficult section of the product. So, it seemed healthy to be ready before starting the implementation.

One of the team members did not seem to show any contribution in this phase. So, the remaining two members made the decisions among themselves. The team then decided to carry out the tasks in this phase by themselves and not waste any time relying on the inactive person.

First task was to create the form without which no further progress can be done. Using the interface design from the design phase, the form was populated just as it was designed. It was helpful for the team and saved a lot of time. Then, one of the members suggested that it’s good to have watermark text on the text fields because it is present in most software products and have it disappeared when the user clicks on it or when it is left blank. So, this process was carried out by having Boolean checks on the event of click where the watermark text would disappear if the corresponding field is empty and re-appear when left blank. The team was slowly crafting an industry-level product.

The next task to display pop-up messages which can be of either information, warning, or error. These were useful because the user would then know if they’re either going in the right track or gain knowledge if they have made any mistakes for example, writing an email address in an incorrect format.

By this time, the form was almost ready and all that was left was the implementation of databases and managing it.

## Personal Evaluation:

With the help of the tasks achieved in the previous phases, it was very convenient for the team to carry out the tasks in this phase. But unfortunately, due to the lack of communication skills of one member, he was oblivious to our decisions and actions. He did not seem to respond to any of our messages or even attend the SCRUM meetings conducted during this phase. Due to his sudden inactiveness, the workload in the phase had to be carried by Jack Isaacs, who was the other team member, and me. We also had the deadline of our dissertations approaching slowly and could not spare as much as time we thought we could. So, overall, it became slightly more difficult for both of us.

As for my tasks in this phase which was the creation of the form, it was easy enough to do with the help of the tools provided in Visual Studio and creating events for buttons and text fields were also automatically done by their tools. I had to carry out some research on how to implement an interactive watermark and after a few searches (C# UI Academy 2017), I was able to implement it efficiently.

# Phase 4: Testing

## Decisions Made:

This was the final phase of the development process. The final product was completed, and the team decided to test the product before releasing it to the customers.

To keep record of the tests taken in this phase, the team had decided to make a test table which would list all the tasks and verify if each of them are working as expected (Add Reference). This was needed because it provided the team a good knowledge of how many parts of the product were working as expected and the problems or issues it had. With this knowledge, the team can then work as quickly as possible to fix the issues and publish it to the public.

## Personal Evaluation:

This was the shortest phase of all and since the project wasn’t a complex one, the testing process was short and quick. The third team member, who was inactive in the previous phase, remained inactive during this phase. So, these processes had to be carried by Jack Isaacs and me and we were doing it simultaneously to save time. We were able to finish the testing on time and produce the executable version of the Café App.

# REFERENCES:

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